

PROJECT NUMBER: 2500  
PROJECT TITLE: Fundamental Chemistry  
PROJECT LEADER: J. I. Seeman  
PERIOD COVERED: April, 1988

I. FLAVOR/ODOR CHEMISTRY (Paine, Secor)

- A. Objective: To develop new technologies for smoke deliveries of desired flavorants; to prepare new substances for flavor/odor evaluation; to develop methodologies for the analysis of subjective data; to derive relationships between physicochemical parameters and subjectives.
- B. Results and Plans: A request for two gallons of glucose menthyl carbonate (GMC) was met. Approximately 9 liters of 65% GMC by weight in PG was prepared and delivered to Flavor Development.

High purity samples of two tetramethylpyrazine (TMP) release agents were prepared. These two substances are part of a series of TMP-polyalcohol substrates, designed to have low volatility but high yields in thermal decomposition to TMP. A group of TMP release agents were submitted to Don Magin for pyrolysis-GC/MS and in all cases TMP was formed.

II. CHEMICAL PHYSICS STUDIES OF TOBACCO CONSTITUENTS (Secor, Seeman)

- A. Objective: To obtain structural information about important tobacco constituents/flavorants; to develop information on cluster formation and chemical reactions in clusters.
- B. Results and Plans: Experimental results previously obtained with E. Bernstein and his group (Colorado State University) on styrenes and anethole derivatives and on pyridines and pyrazines were evaluated. Reports on styrenes,  $\alpha$ -methylstyrenes, and allylbenzenes are near completion. The preparation of two deuterated substrates [1-ethoxy-4-ethyl- $d_5$ -benzene and 2-ethyl- $d_5$ -pyridine] was completed and sent to CSU. Efforts continue to establish and to examine chemical reactions in clusters.

III. REMOVAL OF NICOTINE FROM AQUEOUS TOBACCO PROCESSING FLUIDS (Secor, Seeman)

- A. Objective: To develop techniques to remove nicotine and other tobacco alkaloids from aqueous tobacco processing fluids to the exclusion of all other components.
- B. Results and Plans: Together with H. Grubbs, safety information regarding experimentation with nicotine was transmitted to Sepracor. Samples of the aqueous scrubber from the ART process was prepared by J. Dobbs, extracted into neutral and basic components, and analyzed by J. Naworal (GC/MS).